

# Bone-Shaped Short-Fiber Composites

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***Our bone-shaped, short-fiber composites incorporate a new fiber design that allows their use in load-bearing applications. The bone-shaped fibers solve a long-standing dilemma caused by the fact that increasing the strength of conventional short-fiber composites simultaneously increases their brittleness. Our new composites can be used to make a wide range of load-bearing composite systems such as steel-fiber-reinforced concrete, polymer-fiber-reinforced, polymer-matrix composites; and advanced ceramic-fiber-reinforced, metal- and polymer-matrix composites.***

## Applications

Our composites can be used for almost any structural application:

- concrete infrastructures such as roads, bridges, airports, buildings, and sidewalks;
- motor vehicle parts such as connecting rods, cylinder blocks, pistons, crowns, stabilizer bars, transmissions, and fenders;
- aircraft flooring, helicopter blades, space booms (which extend payloads from a spacecraft or satellite), and landing gear;
- composite ballistic armor for police car bodies, tank armor, and shipboard armor; and
- numerous other industrial structural applications.

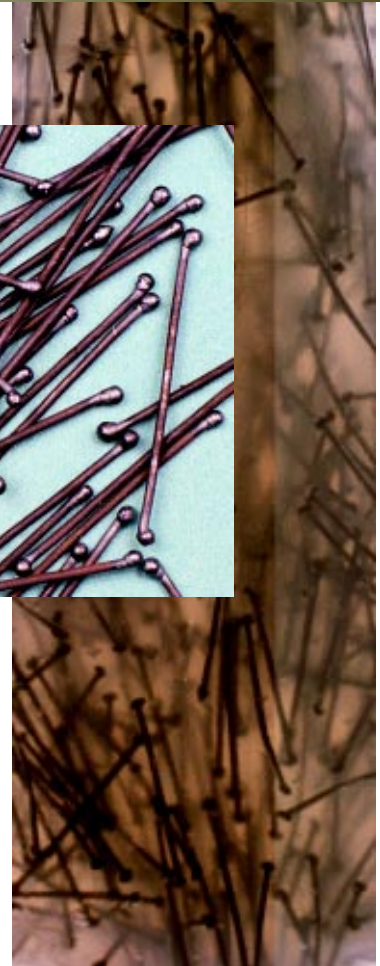
## Benefits

Bone-shaped, short-fiber composites offer many benefits because they

- open up the use of short-fiber composites in numerous load-bearing applications such as concrete infrastructures;
- adapt easily and inexpensively to current fiber and composite fabrication techniques;
- reduce labor costs and time needed to construct concrete infrastructures;
- reduce the cost of maintaining highways and other concrete infrastructures through their longer service life;



Bone-shaped steel fibers (inset) can be added to concrete for reinforcement. The background photo shows a composite consisting of bone-shaped polyethylene fibers mixed in a polyester matrix.



- improve the safety of highways and bridges by arresting crack growth in concrete and preventing catastrophic failure; and
- meet the need for lighter-weight, durable components in the auto and aerospace industries.

***All applications are available for commercial licensing—patent application pending***

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